Fire Program Analysis – Wildland Fire Use Scores for Preparedness Budget Formulation

June 23, 2005

Topic: Wildland Fire Use Scores used in the Preparedness Module

Issue: There is a need to reflect the Wildland Fire Use (WFU) workload within a Fire Planning Unit (FPU) and the fire resources needed to fulfill that workload (along with their respective budget). Model outcomes should indicate if the fire resources needed to manage WFU's are to be included within the FPU's budget or part of a larger geographic area's budget. The larger geographic area would be either the Regional/State or National levels.

Background: The WFU workload score[1] process was developed to fulfill the requirement to include appropriate WFU management capabilities at the FPU level within the preparedness module (Phase 1) of FPA. This development effort included several WFU subject matter experts (SMEs). It was also recognized that the FPU's with WFU would not be required to have as a part of their fire management organizations the fire resources and their associated budgets to manage all WFU's that may occur with the FPU, i.e. as with suppression, local units would not be asked to staff up to handle infrequent highly complex, long duration, large WFU events.

Current Design: Modeled WFU events within FPA-PM have three characteristics that are used for determining each events workload score; final size (measured in acres), duration (measured in days) and the management complexity for the Fire Management Unit (FMU) in which the event occurs.

A group of SME's was gathered to develop the matrix in Figure 1 for the purpose of sorting WFU events into two analysis outcomes for FPA-PM, Phase 1. The first outcome is "deferred", which means that those WFU events that have a certain combination of size, duration and complexity would result in a Regional/National response (as indicated in the Organizational Level of Fire Resources column in Figure 1). These events will be analyzed within FPA – Phase 2, and are not further considered by the optimization routine within FPA-PM. The fire resources required for these WFU events are considered to be components of Regional/State and/or National preparedness organizations and not local FPU organizations, thus not included nor analyzed as part of the FPU preparedness organizations budget.

The second outcome for WFU events with a particular combination of size, duration and complexity result in a local Preparedness response (indicated in the Organizational Level of Fire Resources column in Figure 1). These events will be passed from the data transformer to the optimization routine for analysis in FPA-PM. The optimizer outcome will be reported as either "Accepted or Rejected" depending on other variables such as Dispatch Location Facility

[1] A Model of Fire Use Workload and Workload Fulfillment, Douglas B. Rideout, Ph.D.Professor of Fire Economics; Susan H. HowellResearch Associate, Robin M. Reich, Ph.D. Professor of Forest Biometrics/Spatial Statistics, Howard Roose, Fire Program Analysis System Project Business Team Leader

Prepared by: Howard K. Roose, FPA Core Team, 208-947-3781, hroose@blm.gov

Capacity and FMU attributes such as WFU approval and weights. The outcomes will vary by cost constraint as the dollar amount increases or decreases[2].

The values in Figures 1 and 2 below are those recommended for use in FPA-PM.

Examples:

- A fire event having low complexity, large size, and short duration would be considered as a candidate for management at the FPU level, and the resources needed to manage that event may be included in the preparedness budget of the FPU.

- A fire with medium complexity characteristics, medium size, and long duration would not be expected to be managed at the FPU level without outside assistance. Fires with this combination of characteristics would be 'deferred' in the model and dealt with in future enhancements to FPA. A budget would not be generated at the FPU level for management of these events.

Figure 1.

Modeled Organizational Level of Fire Resources

Modeled Complexity *FPA Input*	**Modeled Size** *FPA Input*	**Modeled Duration** *FPA Input*	**Organizational Level of Fire Resources** *FPA Outcome*
Low	Large	Short	FPU
Low	Medium	Short	FPU
Low	Small	Short	FPU
Low	Large	Long	FPU
Low	Medium	Long	FPU
Low	Small	Long	FPU
Medium	Large	Short	FPU
Medium	Medium	Short	FPU
Medium	Small	Short	FPU
Medium	Large	Long	Reg/Nat
Medium	Medium	Long	Reg/Nat
Medium	Small	Long	FPU
High	Large	Short	Reg/Nat
High	**Medium**	**Short**	**FPU**
High	Small	Short	FPU
High	Large	Long	Reg/Nat
High	Medium	Long	Reg/Nat
High	Small	Long	FPU

[2] Defining Initial Response: Integrating Fire Use with initial attack, Rideout and Kirsch

Prepared by: Howard K. Roose, FPA Core Team, 208-947-3781, hroose@blm.gov

Figure 2.

Quantification of Descriptions used in Figure 1.

SIZE		DURATION		COMPLEXITY	
Small	<= 120 acres	**Short**	1 – 22 days	**Low**	<= 90
Medium	**120.01 – 2500 acres**	**Long**	22 days Plus	**Moderate**	91 - 140
Large	**2500.01 acres Plus**			**High**	>= 141

Prepared by: Howard K. Roose, FPA Core Team, 208-947-3781, hroose@blm.gov
6/24/2005
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